REMARKS

In the Office Action of October 1, 2007, the specification was objected to because it was said that the acronyms, GMSK, GFSK, GSM, DECT and BER were not defined. The second paragraph of page 1 has been amended to provide definitions for these terms.

Claim 18 was objected to because it was believed that the term "baseboard" had been misspelled, and this has been corrected by an amendment to claim 18 to recite "baseband."

Claims 1 and 18 were also rejected under 35 U.S.C. 102(b) as being anticipated by Mueller et al., U.S. Pat. Pub. No. US2002/0122509. The action provided a reading of claim 1 on Mueller.

In paragraph 0002 of the Mueller it is discussed that the object of Mueller is to provide a baseband detector for a direct - conversion digital receiver (DCR), without the need for other IF components. As disclosed in paragraph 0045, Mueller provides a detector that is independent of frequency offset, whereas the present invention develops that term and then processes it.

The frequency offset is described at page 3, second full paragraph of the present application as follows:

> The detector, y_n in Eqn(5) is the sine of the change in phase of the signal $r(t)$ over one sampling duration plus a frequency offset term. Usually, the frequency offset term is non-zero, for example in the Bluetooth standard the transmitter is allowed to have a frequency offset up to $\pm 75kHz$ and a frequency drift rate up to 400 $Hz/\mu s$. Using the detection rule give in Eqn.(6), the performance of the detector depicted in Fig. 2 is degraded when the frequency offset is non-zero.

Referring to paragraphs 14 and 15, which were cited in the Office action, these refer to two different types of known systems which Mueller considered to be background art to his invention

rather than Mueller's invention.

Paragraph 14 of Mueller provides a discussion of a problem associated with the sensitivity of a digital baseband discriminator to frequency offset and frequency deviation. Paragraph 15 provides a discussion of why a particular baseband detector architecture is not always suitable for use with DCRs and why a higher sampling rate is required in this type of circuit. These paragraphs provide a discussion of demodulator.

Paragraphs 24 and 25 in Mueller discuss how Mueller's invention provides a different solution to the problems identified with the prior art. This is a different solution and teaching from the present invention. The modules 64. 66 of Mueller, are not in any way equivalents to the present method and circuitry. Module 64 is a PSK decoder and module 66 is a constellation point computer. A constellation point computer 66, as the name suggests, determines constellation points. A PSK decoder 64 decodes the symbols carried by the baseband signal using a minimum Euclidian distance detection rule. The PSK decoder 64 outputs a decoded bits signal, not an offset signal indicative of a frequency offset of the input signal, as recited by claim 1.

As is clear from the above, Mueller does not provide an analogous fourth element prior to substitution from other references.

Claim 1 recites:

"a demodulator arranged to demodulate the sampled signal to provide a demodulated signal; and

"a frequency offset sensor arranged to sense an envelope of the demodulated signal to provide an offset signal indicative of a frequency offset of the input signal."

Mueller does not isolate and process such a frequency offset signal, so there is no anticipation as determined in the Office

action. As to obviousness Miller teaches away from the solution of the present invention per the comments cited above.

Page 8 of the present application describes how instead of tracking a low frequency component directly, the envelope is tracked through a low pass filter (LPF) to obtain the frequency component. An LPF with a wide bandwidth can then be used to give fast tracking without disturbance and the bandwidth can be narrowed as a function of time with good results.

Claims 2-6 and 14-17 were rejected under 35 U.S.C. 103 (a) as being patentable over Mueller et al. in view of Fujimura et al.

Claim 2 further defines the frequency offset sensor as follows:

". .. wherein said frequency offset sensor comprises:

"a tracker arranged to track the envelope of said demodulated signal from said demodulator and provide a tracking signal; and

"a filter arranged to low pass filter the tracking signal to provide the offset signal."

Claims 4 to 6 further recited a filter coefficient generator that is arranged to reduce the filter coefficient as a function of time, and more specifically according to a formula given in claim 6.

Claim 7 further recites that the said filter is arranged to have a bandwidth which decreases as a function of time.

To reject these claims, the Office action makes the following findings from Fujimura at page 6, first full paragraph:

> Fujimura . . . discloses means arranged to track the envelope (col. 1, lines 52-65) of said demodulated signal from said demodulator (Fig. 17 and 22) and provide a tracking signal; and a filter arranged as a low pass filter (col. 11, lines 36-46; col. 24, lines 34-42) to provide the offset signal.

The undersigned has examined these passages and finds that

they do not describe the determination of a frequency offset, only the calculation of a timing phase difference. Element 403 in Figs. 17 and 22 does not correspond to element 310 in Figs. 3 and 4 of the present application, which corresponds to the recitations in claims 1-7.

The other dependent claims 8-18 do not find correspondence in Fujimura and are allowable for at least the same reasons as stated above for claims 1-7.

Claim 19 was rejected over Mueller in view of Suzuki, U.S. Pat. No. 5,907,585 and raises issues similar to claims 5, 6 and 7.

The Office action cites Figs. 3 and 7 of Suzuki and column 4, lines 43 to 67 and column 8, line 64 to column 9 line 10. However, a closer inspection of the cited passages show that filter 34 performs a filtering operation and a smoothing operation in which the inputs to the filter are smoothed and the number of samples on the time base is reduced within the range that meets the Nyquist sampling thereon. "In other words, a plurality of samples is reduced by the averaging down to 1 (col. 9, lines 5 & 6)." This is not a disclosure of a filter having a bandwidth which varies as a function of time. A bandwidth of a filter defines the range of frequencies which the filter is configured to pass. It does not relate to the number of samples of the filter.

Thus, neither claim 19 nor claims 1-7 read on a combination of Mueller and Suzuki so as to establish a *prima facie* case of obviousness. Furthermore, it is respectfully suggested that the question of whether there would be motivation to combine these references is not reached in this application.

CONCLUSION

In view of the amendment and remarks, reconsideration of the application is respectfully requested. After the amendment, claims 1-19 are still pending and a Notice of Allowance for these claims is respectfully requested.

No fee for extra claims is believed to be due, but in the event that any fee is deemed to be due, please charge Boyle & Fredrickson Deposit Account No. 50-1170.

Respectfully submitted,

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